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Author's regards

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POCKETING THE PEDICLE:

A NEW AND SUCCESSFUL METHOD OF TREATING THE OVARIAN STUMP AFTER EXCISION.

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The operation of ovariotomy is now becoming so very common that in its discussion surgeons have shifted from the question of justifiability, which may be considered settled, to that of methods of performance, their reasonableness and their comparative safety. The following case may, perhaps, be considered as materially contributing towards the final decision. It will be found interesting to physiologists as well as to surgeons:—

The wife of the Rev. Dr. Mack, of Columbia, Tennessee, consulted me, on the 27th of July last, with reference to an operation for the removal of an ovarian tumour of some two years' standing. She had previously corresponded with other ovariotomists of older reputation than myself, but had been influenced in her final choice by the advice of Dr. Morgan, of Cincinnati. Being engaged in lecturing at Pittsfield at the time, I advised the lady to wait till cooler weather, and, at the same time, to avail herself of the opportunity for preparatory treatment. She accordingly spent the months of July and August with friends in Shirley, and reported herself to me, in Boston, during the month of September. The operation was performed in Chelsea, on September 23. There were present, Mr. T. Spencer Wells, of London, Drs. Kimball, of Lowell, Lincoln, of Boston, and Wheeler, of Chelsea; to the latter of whom, as having the charge of the after-treatment, belongs the larger part of the credit of the success that was attained. I consider myself especially fortunate in having had the very valuable assistance of Mr. Wells, whom I hoped to persuade to operate himself; but with true generosity, the master declined that he might volunteer to assist the pupil. Thus inspired, I could but endeavour to win an additional laurel for American surgery, by putting into practice an idea that I believe novel, but to which I have been brought by a long and patient process of inductive reasoning. I shall present the case from the notes of Drs. Lincoln and Wheeler.

"Patient aged 41. Tumour first noticed some two years since in the left iliac region. It has increased steadily till the abdomen is now equably prominent. Tension moderate, but enlargement sufficient to attract attention when the patient is dressed in street costume. Fluctuation distinct in

every part of the abdomen—a single wave. Abdominal contour not altered by change of position. Vaginal wall but slightly protuberant. No œdema of the extremities or evidence of thoracic, hepatic, or renal disease. No previous strain or other injury. Menses have been regular, and are now present, having commenced yesterday.

"*Diagnosis.*—A unilocular cyst of the left ovary.

"At 11 A. M., etherization having been effected, a perpendicular incision of between three and four inches in length was made about half an inch to the right of the median line, starting nearly opposite the navel. The integument, superficial fascia, and a thin layer of fat, were successively divided upon a director, and on opening the peritoneum the ovarian sac was seen translucent and movable. It was punctured by a trocar with tubing attachment, and a considerable amount of fluid having been allowed to escape it was grasped and drawn out without the slightest difficulty. The cyst was unilocular, filled with a straw-coloured fluid, translucent and albuminous, not ropy or thick. Its walls were moderately thick, and with its contents it weighed forty-three pounds.

"Dr. Storer's clamp shield having been applied, and very gentle compression exerted upon the pedicle (which was of the size of the thumb), it was divided with scissors by a clean rectangular incision, and without hemorrhage. On relaxing the clamp one artery of moderate size alone required attention, and this was secured by a ligature of iron wire. Mr. Wells having passed his hand into the abdominal cavity and found the right ovary in a healthy condition, the walls of the primary incision were united by twenty sutures of iron wire; *the extremity of the pedicle being brought between the inner lips of the wound, at its lower angle, and there 'pocketed;'* this being effected by passing three of the stitches through itself and both inner edges of the abdominal wound, and then bringing the external edges closely together; the raw surface of the pedicle being in apposition to the raw surfaces of the wound, and yet covered over fairly and completely by the line of superficial union. A bandage was then applied to compress moderately the epigastrium, and the pads of a well fitting abdominal supporter were adjusted to the iliac regions to supplement the pressure that had been removed. The above proceedings occupied forty-five minutes The patient readily recovered from the ether, and though slightly nauseated did not vomit. For an hour or two there was considerable aching in the hypochondria. Pulse at 1 P. M. 84; at 2 o'clock the same, firm. At this time cramps in the lower limbs, which were speedily relieved by a suppository of one-third of a grain of morphia; complains of a slight chilliness for a couple of hours, for which hot water was applied to the feet. At seven and at nine P. M. pulse at 84, less firm than soft, and surface of the skin very comfortably warm. Catheter was passed about four o'clock P. M., drawing off several ounces with considerable relief; at nine P. M. only a small amount. Mental condition now excellent, no bodily suffering. Patient kept on back and allowed to swallow only a little iced water and gruel.

"*Sept.* 24. Passed the night very free from pain or uneasiness, yet sleeping but lightly for an hour or two, as she had done for two or three nights preceding the operation, though free from anxiety. At 6 A. M. a moderate amount of water drawn. Pulse 72, full, not hard; surface very comfortably warm. Menses still healthily present." (Dr. Lincoln.)

"Throughout the day patient restless, the countenance somewhat sunken, and expression of anxiety; complains of nausea, with dryness of the mouth,

and thirst. Surface of the skin moist, with slight increase of heat; feet cool; pulse 70, and soft, continuing about the same as early in the day. At 3 P. M., pain in the bowels, and a copious bilious discharge with traces of blood, accompanied with tenesmus and exhaustion of strength. A little brandy and water with small pieces of ice at intervals. A suppository containing a third of a grain of morphia was immediately passed up, but soon came back, with another discharge. From this time an enema of from forty to sixty drops of tincture of opium, in a tablespoonful of cold thin starch, was given after each movement. From 3 P. M. till 2 the following morning there were six evacuations, but patient obtained some rest at intervals. She now acknowledges having eaten a pear or two, and swallowed the rinds, just previous to the operation.

"25*th*. Woke at 6 A. M. General expression of features better. Patient somewhat refreshed by her three hours' sleep. Has had no discharge from the bowels since 2 A. M. The stomach has remained quiet. The catheter was used about every four hours to prevent any uneasiness from the bladder. The wound remains dry and free from irritation. The pulse 80, with a little more warmth and dryness of the skin. The diet changed to boiled milk with lime-water, and beef-tea. The stomach and bowels remained quiet through the day.

"27*th*. Has slept better and been more comfortable every way; less thirst; tongue looks better; pulse 72. Some fulness of the upper part of the abdomen, with resonance, but bears pressure well. The bowels less irritable; had only two bilious discharges within the last forty-eight hours. Continues the starch and laudanum injections after each movement; also takes more nourishment.

"29*th*. General appearance much better. Says she feels stronger and more natural, but has not slept quite as well the last two nights. Complains of thirst and a bad feeling in the abdomen, as if distended with gas. The wound begins to-day to discharge a small quantity of pus, the edges, however, of incision looking well. Pulse 70, and quiet; the bladder voids itself, and the urine increases in quantity. Diet: toast, beef-tea, and milk.

"*Oct.* 2. Has slept better for the last few nights. Less nervous excitement; tongue clean; better appetite; less thirst; is cheerful, and desires to see a few friends. The abdomen continues about the same; a little more flat. The wound looks well, and discharges moderately. The day before yesterday (Sept. 30) eight or ten of the sutures from the upper part of the incision were removed. The bowels remain quiet. Beefsteak and mutton-chop added to the diet.

"5*th*. Has slept better for last three nights; no excitement; skin more natural. The abdomen slightly tumid, but soft and without pain. Complains of a little irritation since the wires were removed. The stomach and bowels remain quiet; the strength improves.

"8*th*. For the last three days the patient has gradually improved; sleeps well, and looks brighter; appetite moderate. Complains less of the abdomen; sees a few friends, sits up in bed and reads. The wound doing well. Boiled egg added to the previous diet.

"11*th*. For the last three days has not appeared as well; more restless at night. Appetite not as good; complains of the stomach; some fulness of the bowels, with pain. On the 10th had a small cup of custard, which may have caused some indigestion, as it was followed the next day by vomiting, accompanied by from twelve to fifteen copious dejections, bilious in character, without blood, but with severe dysenteric pains in the rectum.

The frequent evacuations soon prostrated her strength; the skin became moist and cool; pulse feeble; the expression of the face anxious. Stimulants of brandy, wine-whey, and beef-tea were freely given. Tannic acid and the acetate of lead were added to the starch and opium injections, but the discharges were so rapid they could do but little good. Then a grain of oxide of silver in pill and twenty drops of tincture of opium were given every three hours by the mouth. This seemed to check the bowels, but the tenesmus was still troublesome. To quiet it, a solution of nitrate of silver (two grains to the ounce of water) was thrown up by enema, with the effect desired. The stomach continued to bear stimulants and food.

"15*th*. For the last four days she has been gradually improving in strength; the stomach and bowels have behaved better; no discharge. Continues the silver pills, with twenty drops of laudanum, three times a day. Sleeps well; appetite good; takes beef and mutton. The wound looks well and is healing kindly.

"16*th*. Is doing well in every respect. Continues the same generous diet. Wound discharges but slightly. Removed five or six more sutures. From this time continued to gain strength, and health improved; began to sit up and move about the room, the wound nearly healed. On the 19th inst., two of the wires passing through the pedicle having been removed, the remaining one was cut off very low down, and left to be permanently covered by the integument.

"Upon the 22d the patient was discharged and allowed to drive to visit friends in Salem, a distance of some twelve miles." (Dr. Wheeler.)

It will be seen that in two important respects I deviated from the usual methods in practice.

In the first place, I operated during menstruation. We have, all of us, been inclined to imagine that the approach or the presence of the catamenia formed an insuperable bar to the performance of any serious pelvic operation, alike from the increased nervous tendencies of that period, and from a supposed greater liability to primary or secondary hemorrhage. Mr. Wells informs me that of his long series of ovarian sections, now rapidly approaching the second half of the third hundred, none have been at the menstrual period, and the same caution seems to have been observed by other surgeons. By the usual methods of practice, to operate at the menstrual period is perhaps dangerous. It may be, however, that we have all been mistaken with respect to the absolute risk, and that with the impossibility of secondary hemorrhage occurring, and the ease of primarily closing the vessels, that I have now provided for the cases where the pedicle is sufficiently long to be "pocketed," the presence of the sanguineous discharge from the uterus may prove truly critical and of advantage in lessening the chance of subsequent metritic or peritoneal inflammation. At any rate, the successful issue of the case now reported proves that the period referred to is not necessarily attended with danger; moreover the shock of the operation, and the removal of one ovary during menstruation, produced no sensible effect in lessening or increasing the amount of the catamenial discharge. This is a question I have long been anxious to study upon the

living subject, and especially in a case where, as here, only a single Graafian vesicle had become cystic and the remainder of the affected ovary remained perfectly healthy; a point of great interest to physiologists. It will be noted, also, that up to the time of operation, the menses had remained normal, instead of having lessened in amount as is very often the case in ovarian disease. I am satisfied that physiologists have yet to materially modify certain of the views generally accepted, as to the essential characters of menstruation. To one important point I called attention some two years ago when reporting the case of Miss Colcord, of Malden, from whom I removed the uterus and both ovaries; eighteen days after the operation, and twenty-six after the last catamenia, there occurred from the vagina "a sanguineous effusion, attended by feelings of lassitude, backache, etc. etc., lasting thirty hours, and being an evident attempt at the re-establishment of menstruation."[1] I am not aware that a similar case to this has ever been reported. It is now two years and two months since the operation, and the lady continues in perfect health.

Still again, I removed both ovaries, a year since, from a patient in Brookline, Mrs. Mathews, having the assistance of Drs. Faulkner of Jamaica Plain, Francis and Salisbury of Brookline, and Mitchell, of Jacksonville, Florida. In this case I deviated from the usual method of dealing with the pedicle, in that I did not divide it, as is usually done, but carefully dissected away the Fallopian tubes, throughout their whole length, from the surrounding masses, preserving them intact, and then closed the peritoneal wounds along their entire course by metallic wires, which acted both as ligatures and sutures: inserting upon one of the tubes some five of them, and upon the other three. The lady recovered without a bad symptom. The ovaries were entirely removed, and yet the patient has had, during the supervening period, quite regularly, a sanguineous discharge, without evidence of uterine disease, and which hæmostatics, generally and locally applied, have failed to check or prevent. This occurrence, in its persistence and regularity, seems materially to differ from the hemorrhagic discharge sometimes seen very shortly after an ovarian section. I commend these points to the attention of physiologists.

In the second place, reasoning purely from effect to cause, I ventured to treat the ovarian stump in a manner that is, so far as I am aware, a novel one. To the present time, operators seem to have adopted four different methods of dividing the ovarian attachments, and some nine different methods of treating the stump, with the end of controlling hemorrhage, preventing suppurative drain or absorption, and of escaping peritonitis.

I. Division of the Ovarian Attachments.

1. By the knife.
2. By the ecraseur.

[1] American Journal of the Medical Sciences, January, 1866.

3. By the actual or galvanic cautery.

4. By dissecting away only the diseased portions where the parts are much involved, and leaving the Fallopian tubes entire. (My own.)

II. Subsequent Treatment of the Stump.

A. *Stump internal.*

1. Ligatures, whether of the whole stump, or of its two halves, or of the vessels separately; the extremities being brought through the external wound or through the vaginal roof.

2. Ligatures cut off, whether organic or metallic, and the wound closed.

3. No ligature. Attempt being made to prevent hemorrhage by the actual or galvanic cautery, or some powerful styptic, as persulphate or perchloride of iron, with or without compression or crushing of the tissues with the clamp.

4. A combination of the above methods.

5. Acupressure, the needle passing through the wound.

6. Acupressure, the wound being closed and the needle passing through two other points of the abdominal wall. (Simpson.)

B. *Stump external to the abdominal integument.*

7. Being retained by some form of clamp, as that of Mr. Wells.

8. By transverse pins, or

9. By the sutures of the wound;[1] in either of these cases attempt being made, or not made, to control hemorrhage by the actual cautery or some styptic, or to prevent suppurative action by inducing mummification. Under all these methods patients have recovered, but to all of them there are certain grave objections, and the question is: Can even a larger percentage of patients be saved than has, as yet, been done? Our science has a right to demand that its votaries elect only such modes of practice as are based upon the soundest application of general principles. Apply-

[1] In looking up the history of division of the pedicle, I find that Scanzoni refers to "a procedure of Langenbeck, according to Wagner," about which there may possibly be some doubt, and therefore, in justice, I refer to it. "The portion of the pedicle which remains (after division) is retained in the womb (*sic, an venter abdominalis?*) in such a manner that the part of the peritoneum which invests the latter (?) shall remain in contact with that of the abdominal wall. (?) The wound is then carefully closed by means of an interrupted suture, which does not implicate the peritoneum, but some threads of which pass into the pedicle." (*Diseases of the Sexual Organs of Women*, Gardner's edition, p. 473.) Scanzoni's description is a very blind one. He gives among his references none to Wagner's article, nor to any paper by Langenbeck, and it has not been alluded to by English or French writers upon the subject. Diligent search among the German journals has failed to clear up the point, and, as my friend Dr. Francis C. Ropes, of this city, one of Langenbeck's pupils, is ignorant of his having differed from other operators in his treatment of the pedicle, I am forced to believe that the method referred to is merely the old one of stitching the extremity of the pedicle into the lips of the external wound.—H. R. S.

ing this rule to the operation in question, the ovariotomist seeks to prevent hemorrhage, primary and secondary; to avoid suppuration, fatal by producing exhaustion or septæmia; and to escape peritonitis.

Now how is it in reference to these points with each of the methods ordinarily adopted?

Let us consider.

I. The Division of the Ovarian Attachments.

1. *By the knife.*—An incised wound bleeds more freely than a contused one. Ligatures are always apt to slip, and give free exit to a fatal flow; besides "there is often much loose cellular tissue, rich in small veins, which go on oozing, after all the larger vessels have been tied;"[1] therefore it is, that, *a priori*, preference should be given to the ecraseur, and to the actual cautery; to which, however, it will be shown there are equal objections.

2. *By the ecraseur.*—I have myself, in several instances, resorted to this instrument and with a fair measure of success. In one of my papers upon ablation of the uterus, I have, however, pointed out several grave dangers attending its use; one is, the almost inevitable dragging in of outlying tissues (if my clamp-shield is not used), and so greatly increasing the number of vessels divided. Besides this, from a contused wound there is a greater liability to subsequent suppuration. "I never saw," says Mr. Wells, "more profuse suppuration than in one case where I divided the pedicle with the ecraseur."[2] And again: "The ecraseur I used once and successfully; but I have not ventured on it again, for if it should prove untrustworthy, and internal bleeding occur in any case, one's self-reproach would be very painful."[3]

The same is true of

3. *Division by the cautery.*—"The cautery alone," remarks the surgeon from whom I have quoted, "would almost certainly fail to stop such large vessels as are frequently met with in a pedicle."[4] Despite the attempt to dazzle the profession made by Mr. Baker Brown, whose proven unreliability in another matter is sufficient to destroy his authority in this, there exists a growing distrust of a method whose dangers are, theoretically, so evident. It may be asserted that very different changes take place within the abdominal cavity after operations, than in regions of the body more completely exposed to the action of the atmosphere. This is undoubtedly true to a certain extent, but not so far as to warrant our adopting an entirely new system of abdominal physiology and pathology, as would else be required.

4. *My own method of partial division, as practised in the Mathews case.*—It has these advantages, that no vessels are unnecessarily divided, and that by the closure of the cut peritoneal edges along the Fallopian

[1] Spencer Wells, Clinical Remarks on Different Modes of Dealing with the Pedicle in Ovariotomy. British Medical Journal, Oct. 1866, p. 378.

[2] Ibid. [3] Ibid. [4] Ibid.

tubes, their primary union is rendered probable, hemorrhage prevented, and the general peritoneal surface preserved from contact with any newly divided or suppurative tissue. By this method the use of the écraseur and the actual cautery are rendered unnecessary. It is applicable, with but slight modification, to nearly all difficult cases conceivable; and may then, perhaps, be termed "Capping the stump." For just as Marion Sims found, in amputation of the cervix uteri, he could insure a quicker convalescence, devoid of many of the usual dangers, by simply bringing together from each side the mucous membrane, and forming a linear closure, well stitched to the deeper tissues, so can the serous lips of a peritoneal wound be approximated, and mechanically made to close the mouths of bleeding vessels. Where the pedicle is a long one, my second method will usually be found practicable, and the stump should therefore be "pocketed." When it is short, or there is practically none at all, the stump can still be "capped;" metallic sutures, as in other surgical operations, being preferable to silk, catgut, or flax.

Consider now in the same light—

II. The Subsequent Treatment of the Stump.

Whether the extremity of the stump be left entirely within or without the abdominal wound—whether it be *intra* or *extra*-mural, there must necessarily exist certain grave dangers which, by the *inter*-mural attachment, or pocketing, are avoided. This may be made evident alike as concerns the ligature, however applied, and whether removed or left permanently *in situ*, the cautery, Mr. Dixon's wire compress, and acupressure; the latter so excellent in itself, and though comparatively safe, yet positively so hazardous when resorted to within the abdominal cavity. "If," as Mr. Wells said of the écraseur, and as might be said equally well of either the ligature or the cautery, for with both methods has the danger repeatedly been realized in a fatal result, "if it should prove untrustworthy, and internal bleeding occur in any case, one's self-reproach would be very painful." These several risks have been so fully pointed out in the paper upon "The Different Modes of Dealing with the Pedicle," from which I have quoted, that it is unnecessary for me here to do more than refer to them. Mr. Hutchinson made an immense advance in lessening the mortality of ovariotomy, when he brought the extremity of the pedicle outside of the abdominal cavity, and at once decreased the risk of hemorrhage, of peritonitis, and of a subsequent hæmatocele, from reflux of the catamenia through the divided Fallopian tubes; an accident which has frequently happened, and is liable to be attended by a fatal result. While, however, the external or extra-mural method, whether by clamp, or pins, or suture, is, where the pedicle is long enough, far superior to the wholly internal method, in any or all of its forms, Mr. Wells has had the good sense to perceive, and the frankness to avow, that it has yet not been per-

fect. I do not here refer to certain objections that have been made, that Mr. W. has justly characterized as either groundless or trivial. We must allow that the clamp does not necessarily cause pain or vomiting, and that in the case of a subsequent pregnancy it does not necessarily induce abortion. "But," says Mr. Wells, "it is said to set up fetid discharge, and poison the wound or the patient; and so it does, if proper care be not taken." "It is said to cause suppuration about the wound; but this again I have seen quite as frequently, in proportion, after the ligature or cautery." "After the wound is closed, it is said to lead to a reopening each month, and an escape of some menstrual fluid; and this is true in some, perhaps nearly a third of the cases." "A real objection," he continues, "to the clamp is, that it may possibly pull on intestine, or a tense pedicle may strangulate intestine; and I have seen one such case. But this objection is of but little weight if the use of the clamp be restricted to cases where the pedicle is so long that there is not much drag on the clamp."

By "pocketing," all these risks are avoided.

1. The raw surface of the pedicle is attached directly to the raw surface of the abdominal wall, and the most favourable condition for primary union of these surfaces is secured.

2. Primary hemorrhage is as easily prevented as though the pedicle were external, and so is secondary hemorrhage also; for any desirable amount of compression can be obtained by the sutures; and if, for any reason, it were thought advisable, the external lips of the wound might be opened, and the stump inspected by untwisting the wires, without opening the inner lips of the wound and exposing the abdominal cavity.

3. There is no inevitable fetid discharge from the stump, as is otherwise the case, unless its tanning or mummification by perchloride of iron is effected.

4. If a careful adaptation of parts has been made, serous edge to serous edge, and only raw surface to raw surface, as can be easily obtained with a little care, there is slight risk of suppuration being excited in adjacent tissues. In the Mack case it was but superficial, and had the pocketing been done with the dexterity that a little practice at it will give, there would probably have been none at all.

5. The existence of an infra-umbilical uterine outlet for the catamenial flux, and the occurrence of an intra-peritoneal hæmatocele, are alike rendered impossible.

6. The possibility of traction on intestine, or of its strangulation, is far less likely than with the use of the clamp, inasmuch as we are able to save from one to two inches more of the pedicle, according to the thickness of the clamp that might else have been used, and of the abdominal wall through which the stump would have had to come.

It will be noticed that I placed a metallic ligature upon that portion of

the stump inclosed in the pocket, and that I allowed the point of flexion of one of the supporting sutures to remain. In future, I shall probably not do this, but simply employ an acupressure needle by the "overtwist" method, just as I am accustomed to do when amputating the breast; the condition of things in the ovarian case being, by pocketing, rendered as simple and safe as in the other. It will be also noted that I employed scissors rather than the knife or écraseur in dividing the pedicle. I wished to avoid the contusing effect of the latter instrument, and yet escape the free hemorrhage occurring from the use of the former; and I am accustomed to think, with my friend Dr. Emmet, of the State Woman's Hospital of New York, that the action of scissors resembles sufficiently that of the écraseur to produce a marked effect towards modifying the risk of hemorrhage. In pocketing, the knife may, however, be used without any of that fear that must necessarily exist with every form of the intra-peritoneal method. I divided the pedicle, moreover, by a rectangular sweep, that I might thereby nearly double the amount of severed surface, and obtain an increased length of attachment to the walls of the external wound.

In cases where there is a distinct pedicle, but yet not of sufficient length for pocketing, a modification of "capping" has been suggested to me by my assistant, Dr. Alex. J. Stone. It is that, by thus rectangularly notching the extremity as above, its edges may be brought directly together, and the whole be dropped back into the pelvic cavity, with the effect of obtaining a smooth and non-suppurating stump. I consider the proposal an excellent one. It may be thought that the artery would necessarily retract, but if the sutures were properly applied, and with care, this would be avoided.

Mr. Wells expressed some surprise that I made the attachment at so high a point, midway between the umbilicus and the pubis. It will be perceived, however, that provided the pedicle be long enough, the higher its attachment the better, in view of a subsequent pregnancy, the uterus being thus allowed to rise to a higher point than would otherwise be possible. He also remarked to me his astonishment that ovariotomy, being from the first pre-eminently an American operation, should have made nearly as slow progress in becoming accepted as legitimate in this country as elsewhere. Under the circumstances is it too much for me to hope, that the two new American methods, "capping" and "pocketing," may be generally adopted at home, and that the great authority of the day, who, by his late visit and practical teachings, has done more than any one of our own teachers could have accomplished towards convincing our profession of the legitimacy of ovariotomy, may become the first to test their value on the other side of the Atlantic? He has said in the papers from which I have quoted, that "where the clamp is possible, he wishes for no readier or more successful method." He had not then perceived, however, that in treating the ovarian stump, we are not necessarily confined to either the

external or the internal method. Here, as in a great many other matters, *in medio tutissimus ibis.* In taking the half step backward from the external surface to the "pocket," I have but [honoured] the example of his usual practice in withdrawing the stump from the peritoneal cavity, hitherto the greatest improvement in ovariotomy.

I should have hesitated thus to present as important a single case, and to draw conclusions from it as I have done, had there not evidently existed intrinsic and valuable elements upon which to base them.